

SHEET MEMBER OUTPUT MECHANISM AND SHEET MEMBER DETECTION STRUCTURE FOR LABELING MACHINE

BACKGROUND OF THE INVENTION

5 1. Field of the Invention:

The present invention relates to a sheet member output mechanism for use in a labeling machine to transfer printed sheet member to the outside of the labeling machine and, more particularly, to such a sheet member output mechanism, which is
10 detachable.

2. Description of the Related Art:

FIG. 1 shows the sheet member output structure of a labeling machine 1a. The labeling machine 1a comprises a top cover shell 11a equipped with a bottom pressure member 111a, and
15 a bottoms hell 12a. The sheet member output structure of the labeling machine 1a comprises a sheet-transfer cylinder 21a mounted in the bottoms hell 12a corresponding to the pressure member 111a, and an impression cylinder 22a mounted in the bottoms hell 12a adjacent to the sheet-transfer cylinder 21a. The
20 sheet-transfer cylinder 21a and the impression cylinder 22a are fastened pivotally with the bottom shell 12a. The pressure member 11a has two holding portions 112a disposed at the two ends and respectively pressed on the two end round rods of the sheet-transfer

cylinder 21a. This structure of sheet member output mechanism is functional. However, because the sheet member output mechanism is not detachable, it is inconvenient to inspect and clean the sheet member output mechanism.

5 Further, during the operation of the aforesaid labeling machine, printed sheet members (for example, barcode labels) are continuously delivered out of the output side of the labeling machine. The scattered printed sheet members may be rubbed against one another, thereby causing the printed pattern (ink or
10 carbon) to be rubbed away.

SUMMARY OF THE INVENTION

The present invention has been accomplished under the circumstances in view. It is the main object of the present invention to provide a sheet member output mechanism for labeling machine,
15 which is detachable for easy maintenance. It is another object of the present invention to provide a sheet member detection structure for labeling machine, which automatically detects the presence of a sheet member at the output side of the bottom shell or removal of the printed sheet member from the output port of the front cover of
20 the labeling machine.

According to the present invention, the sheet member output mechanism comprises a sheet-transfer cylinder mounted in the receiving open chamber at the output side of the bottom shell,

the sheet-transfer cylinder comprising a cylinder body, and a shaft axially extended through the cylinder body; two brackets adapted to support the sheet-transfer cylinder in the receiving open chamber at the output side of the bottom shell, each the bracket comprising a bearing base, the bearing base defining a receiving space adapted to receive the shaft of the sheet-transfer cylinder, and two mounting portions respectively outwardly extended from two top free ends of the bearing base and adapted to hang the respective bracket on a part in the receiving open chamber at the output side of the bottom shell; a plurality of axle bearings bilaterally disposed at two sides of each the bracket, the axle bearings each having a circular center hole, which receives the shaft of the sheet-transfer cylinder; and a driven member fastened to one end of the shaft of the sheet-transfer cylinder and coupled to a transmission mechanism inside the labeling machine for rotating the sheet-transfer cylinder. A second paper sensor is mounted in the output port of the front cover of the labeling machine and adapted to output a signal to the labeling machine to drive the labeling machine to transfer a next printed sheet member to the output port of the front cover after removal of the printed sheet member been outputted to the output port of the front cover.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is an exploded view of a sheet member output

mechanism installed in a labeling machine according to the prior art.

FIG. 2 is an exploded view of a sheet member output mechanism according to the present invention.

5 FIG. 3 is an exploded view showing the positioning of the sheet member output mechanism in a labeling machine according to the present invention.

FIG. 4 is a schematic sectional view showing the detaching action of the sheet member output mechanism from the bottom shell
10 of the labeling machine according to the present invention (I).

FIG. 5 is a schematic sectional view showing the detaching action of the sheet member output mechanism from the bottom shell of the labeling machine according to the present invention (II).

FIG. 6 is a sectional front view of a part of the labeling
15 machine, showing the sheet member output mechanism positioned in the bottoms hell of the labeling machine.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring to FIG. 2 a sheet member output mechanism 10 in accordance with the present invention is shown comprising a
20 sheet-transfer cylinder 1, a plurality of axle bearings 2, two brackets 3 and 3', a driven member 4, and two C-shaped clamps 5 and 5'. The brackets 3 and 3' support the sheet-transfer cylinder 1 in the labeling machine (not shown). The locating devices 5 and 5'

are adapted to secure the sheet member output mechanism **10** to the inside of the labeling machine, for enabling the sheet-transfer cylinder **1** to be rotated by the internal transmission mechanism (not shown) of the labeling machine via the driven member **4**.

5 The sheet-transfer cylinder **1** comprises a cylinder body **14**, a shaft **11** axially extended through the cylinder body **14**, two annular grooves **12** and **12'** respectively extended around the periphery of the two distal ends of the shaft **11**, and a flat positioning portion **13** at one end of the shaft **11**.

10 The brackets **3** and **3'** each comprise a bearing base **31** defining a receiving space **32** adapted to receive the shaft **11** of the sheet-transfer cylinder **1**, two mounting portions **33** and **34** respectively outwardly extended from the two top free ends of the bearing base **31** for hanging on a part in the bottom shell of the
15 labeling machine (not shown), and two retaining portions **35** and **36** respectively disposed at two sides of the bearing base **31** adapted to engage corresponding retaining portions (not shown) and to further secure the respective bracket **3** or **3'** to the labeling machine after hanging of the mounting portions **33** and **34** inside the bottom shell
20 of the labeling machine.

 The axle bearings **2** are bilaterally disposed at two sides of each of the brackets **3** and **3'**, each having a circular center hole **21**, which receives the shaft **11** of the sheet-transfer cylinder **1**.

The driven member 4 according to this embodiment is a gear wheel having peripheral teeth 41 meshed with the transmission mechanism of the labeling machine, a center gear hole 42, which receives the shaft 11 of the sheet-transfer cylinder 1, and a flat
5 positioning portion 43 disposed inside the center gear hole 42 and abutted against the positioning portion 13 at one end of the shaft 11 of the sheet-transfer cylinder 1 to ensure synchronous rotation of the sheet-transfer cylinder 1 with the driven member 4.

The C-shaped clamps 5 and 5' are respectively fastened to
10 the annular grooves 12 and 12' at the two distal ends of the shaft 11 to secure the driven member 4 and the axle bearings 2 to the shaft 11 of the sheet-transfer cylinder 1.

Referring to FIGS. 3~6, when assembled, the sheet member output mechanism 10 is mounted in a transversely extended
15 receiving open chamber 62 at the output side 61 of the labeling machine to force the retaining portions 35 and 36 of the sheet member output mechanism 10 into engagement with respective retaining portions 63 at the ends of the receiving open chamber 62, keeping the driven member 4 meshed with the transmission
20 mechanism of the labeling machine, referenced by 20.

When the transmission mechanism of the labeling machine started to rotate the driven member 4, the sheet-transfer cylinder 1 is rotated with the driven member 4 to transfer the printed sheet

member to the outside of the outside side 61 of the labeling machine 20.

In case of paper jam during operation of the labeling machine 20 or when wishing to clean the sheet-transfer cylinder 1, the top cover shell 7 of the labeling machine 20 is opened from the bottom shell 6, and then squeeze the retaining portions 33 and 34 of each bracket 3 to disengage the retaining portions 35 and 36 from the retaining portions 63 at the receiving open chamber 62 of the bottom shell 6 of the labeling machine 20, and then remove the sheet member output mechanism 10 from the bottom shell 6 of the labeling machine 20 for cleaning.

Referring to FIG. 3 again, a first paper sensor 8 is mounted in the output side 61 of the bottom shell 6 in front of the sheet member output mechanism 10. Upon detection of the presence of a sheet member at the output side 6, the first paper sensor 8 gives a signal to the control circuit of the labeling machine 20, causing the labeling machine 20 to stop the transmission mechanism (i.e., to stop the sheet member output mechanism 10). A second paper sensor 8' is mounted in the output port 91 of the front cover 9 of the labeling machine 20 behind a bearing plate 92. Upon removal of the printed sheet member by the user, the second paper sensor 8' is induced to output a signal to the control circuit of the labeling machine 20, thereby causing the labeling machine to drive the sheet

member output mechanism 10 to output another printed sheet member to the output port 91 of the front cover 9. The paper sensors 8 and 8' can be optical sensors, induction sensors, contact sensors, or any of a variety of suitable sensors.

5 A prototype of sheet member impression device has been constructed with the features of FIGS. 2~9. The sheet member impression device functions smoothly to provide all of the features discussed earlier.

10 Although particular embodiments of the invention have been described in detail for purposes of illustration, various modifications and enhancements may be made without departing from the spirit and scope of the invention. Accordingly, the invention is not to be limited except as by the appended claims.